

Name _____

1. E.7.1 Discuss salinization, nutrient depletion and soil pollution as causes of soil degradation. (3) *Salinization: This is the result of continually irrigating soils. Irrigation waters contain dissolved salts, which are left behind after water evaporates. In poorly drained soils, the salts are not washed away and begin to accumulate in the topsoil. Plants cannot grow in soil that is too salty. Nutrient depletion: Agriculture disrupts the normal cycling of nutrients through the soil food web when crops are harvested. This removes all the nutrients and minerals that they absorbed from the soil while growing. Practices leading to amelioration of nutrient depletion may further contribute to environmental pollution. Soil pollution: This is the consequence of the use of chemicals such as pesticides and fertilizers. These chemicals can disrupt the soil food web, reduce the soil's biodiversity and ultimately ruin the soil. The chemicals also run off the soil into surface waters and move through the soil, polluting groundwater.*
E.7.2 Describe the relevance of the soil organic matter (SOM) in preventing soil degradation, and outline its physical and biological functions. (2) *The term soil organic matter (SOM) is generally used to represent the organic constituents in the soil, including undecayed plant and animal tissues, their partial decomposition products and the soil biomass. It includes: (1) identifiable, high-molecular-mass organic materials (for example, polysaccharides and proteins.) (2) simpler substances (for example, sugars, amino acids, and other small molecules.) (3) humic substances. The functions of SOM can be broadly classified into two groups: (1) Biological: provides source of nutrients (P,N,S) and so contributes to the resilience of the soil/plant system. (2) Physical: improves structural stability, influences water-retention properties and alters the soil thermal properties.*
 - a. What are the organic and inorganic parts of soil?
 - b. Describe the composition of soil:
 - c. Soil that is ideal for agriculture consists of:
 - d. What is below the soil?
 - e. How does soil decay?
 - f. What is Soil Organic Matter?
 - g. How is humus formed? And where?
 - h. What happens during the physical and chemical weathering of soil?

- i. There are two types of soil degradation, provide information for each:

Nutrient Depletion	Chemical Pollution

2. E.7.3 List common organic soil pollutants and their sources. (1) *Examples should include petroleum hydrocarbons, agrichemicals, volatile organic compounds (VOCs), solvents, polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), organotin compounds and semi-volatile organic compounds (SVOCs).* **Aim 7:** Data banks and spreadsheets can be used here.

- a. Soil pollutants are nitrates, phosphates, organic materials and so on. Discuss the organic pollutants:

Persistent Chemical Pollutants	
Volatile Organic Compounds	
Polycyclic Organic Compounds	
Organotin Compounds	